89-e20

Segment No. 05-10-05

WA-10-1032

WASHINGTON STATE DEPARTMENT OF ECOLOGY
ENVIRONMENTAL INVESTIGATIONS AND LABORATORY SERVICES

December 15, 1989

TO: Richard Koch

FROM: Pat Hallinan PH

SUBJECT: Weyerhaeuser, Enumclaw Class II Inspection

INTRODUCTION

At the request of Alex Gonzales of the Northwest Regional Office (NWRO), Ecology conducted a Class II inspection at the Weyerhaeuser sawmill near Enumclaw on October 24 and 25, 1988. Additional runoff samples from the site were collected on November 2, 1988, during moderate rainfall. Pat Hallinan and Norm Glenn from the Ecology Compliance Monitoring Section conducted the inspection. Bill Shaw of Weyerhaeuser provided assistance.

Wastewater discharges from the mill site through a large pond to Boise Creek. NPDES permit WA-000252-6 regulates the discharge. Water sources to the pond consist of water from a truck wash, runoff from the mill site, and seepage from an abandoned lagoon. Boise Creek may also enter the pond, but only during high flow events. According to mill personnel, this rarely occurs. Weyerhaeuser has plans to drain and reclaim a portion of the pond.

The mill presently uses a mechanical debarker for logs prior to cutting; a hydraulic debarker was used previously. An abandoned treatment system consisting of a clarifier and the lagoon mentioned above treated the spent water from the hydraulic debarker.

Objectives of the inspection included:

1. Support NPDES permit reissuance.

2. Evaluate effluent effects on Boise Creek water quality parameters.

3. Characterize abandoned aerated lagoon and pond sediment samples for priority pollutants.

4. Characterize runoff samples from the mill site.

5. Split samples with the permittee to determine the accuracy of laboratory results.

PROCEDURES

During the October visit, Ecology collected pond effluent grab and 24-hour iced composite samples. An ISCO automatic sampler was set to collect about 220 mLs of sample every 30 minutes for 24 hours. The effluent sampler was placed at the pond effluent weir (see Figure 1).

Ecology also sampled upstream and downstream stations on Boise Creek (see Figure 1). The upstream station sampled was approximately 150 yards from the mill site (Longitude 122 55' 28", Latitude 47 11' 32"). The downstream station was about 50 yards downstream from the pond discharge (Longitude 122 55' 47", Latitude 47 11' 23"). On the mill site, the creek is diverted underground for approximately 100 yards.

During the November visit, pond effluent and mill site runoff adjacent to the mill shop were sampled (see Figure 1). While taking the pond effluent samples, a truck was being washed at the truck wash. On arriving at the truck wash site, the truck had left. However, water was still flowing in the channel entering the pond. This water was sampled on the downstream side of an oil and grease boom. This oil and grease boom appeared ineffective; most of the wash water was bypassing the boom toward one side of the channel.

Sediment samples were collected from the pond and the abandoned lagoon (see Figure 1) using a small stainless steel dredge. The dredge was tossed into the pond/lagoon, then dragged back to the bank where the sediment was removed. Samples consisted of three to four individual grabs which were thoroughly mixed then divided for separate analysis. Sediment from the abandoned lagoon consisted of tiny wood chips mixed with mud. Oil and grease were observed rising to the water surface when the pond and lagoon sediment was disturbed during sampling. Stainless steel equipment used in sediment collection was acid and solvent washed before use.

Weyerhaeuser also collected pond effluent grab samples during the October sampling as part of regular NPDES monitoring. Samples collected at the site are taken to Weyerhaeuser's research and development facility in Federal Way for analyses. Table 1 on the following page lists all Ecology and Weyerhaeuser sampling times and parameters analyzed.

RESULTS AND DISCUSSION

Flow data collected during the inspection are summarized in Table 2.

Table 2. Flow Measurements - WEYCO, 10/88

Station	Date	Time	Flow cfs	Flow MGD
Boise Creek -above discharge	10/25	11:30	12.80	8.27
Pond Effluent	10/25	12:12	0.03	0.02
	10/26	11:00	0.10	0.07
	11/02	13:10	0.45	0.29

Table 1. Sampling Times and Parameters Analyzed - Weyco 10/88

Station:	Pond Effluent					Boise Creek -Above-	Boise Creek -Below-		Site Runoff	Truck Wash Water	Lagoon Water	Lagoon Sediment	Pond Sediment
Type:	Grab				Composite	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Date:	10/25	10/25	10/26	11/2	10/25-26	10/25	10/25	10/26	11/2	11/2	10/26	10/25	10/26
Parameters / Time:	1212	1604	1100	1330	1100-1100	1130	1440	1230	1250	1330	1335	1505	1145
GENERAL CHEMISTRY													
Turbidity (NTU)	X	X			X	X	X	X					
pH (S.U.)					X								
Conductivity (umhos/cm)					X								
Alkalinity (mg/L as $CaCO_3$)					X								
Cyanide (mg/L)											X		
Solids (mg/L)													
TS					X								
TNVS					X								
TSS	X	X	X	X	X	X	X	X	X	X			
TNVSS					X								
BOD_5 (mg/L)			X		X								
COD (mg/L)	X	X	X	X	X	X	X	X	X	X			
Nutrients (mg/L)													
NH_3-N	X	X	X	X	X	X	X	X	X				
NO_3+NO_2-N	X	X	X	X	X	X	X	X	X				
T-Phosphate	X	X	X	X	X	X	X	X	X				
Fecal Coliform (#/100mL)	X	X	X			X	X	X					
% Kleb	X		X			X	X	X					
% Solids												X	X
Grain Size												X	X
Phenols											X		
Grease & Oils	X	X	X	X			X	X	X	X			
TOC												X	X
ORGANICS + METALS													
pp metals											X	X	X
ABN (water)											X		
ABN (solids)												X	X
VOA (water)											X		
VOA (solids)												X	X
Pest/PCB (water)											X		
Pest/PCB (solids)												X	X
FIELD ANALYSES													
Temperature (°C)	X	X	X			X	X	X					
pH (S.U.)	X	X	X			X	X	X					
Conductivity (umhos/cm)	X	X	X			X	X	X					
Dissolved Oxygen (mg/L)						X	X	X					

General chemistry data from samples collected are summarized in Table 3 (following page). There was little variation in the pond effluent: Biochemical oxygen demand (BOD), total suspended solids (TSS), turbidity, and chemical oxygen demand (COD) in the pond 24-hour composite sample and the pond grab samples were essentially identical.

Comparison of Mill Pond Effluent Parameters to NPDES Permit Limits

A comparison of NPDES permit limits to mill pond effluent parameters is given in Table 4. BOD, TSS, oil and grease, and pH for the mill pond effluent were within permit limits. Total settleable solids of the mill pond effluent were not measured during the inspection.

Table 4. Comparison of NPDES Permit Limits with Inspection Data - WEYCO, 10/88

	NPDES Permit Limits	Inspection Data		
	Daily Maximum	Ecology Composite	Ecology Grabs	WEYCO Grabs
Flow (cfs)	Irregular			
Total Settleable Solids (mg/L)	0.1	- Not Measured -		
Total Suspended Solids (mg/L)	50	10	6,6,2	3
BOD (mg/L)	10	<5	<5	2
Oil and Grease (mg/L)	10 mg/L and no visible sheen		3,3,4	
pH (S.U.)	6.5 - 8.5	6.9,6.6,6.7		6.65

Results of Receiving Water Survey and Comparison to NPDES Permit Limits

Boise Creek is not specifically classified in the State Water Quality Standards and, as such, is designated a Class A water body (Ecology, 1988). The NPDES permit requires Weyerhaeuser to monitor Boise Creek above and below the mill site. A comparison of Class A water quality standards and NPDES permit limits to data resulting from the inspection is listed in Table 5. Dissolved oxygen (D.O.) at the downstream station did not meet the 8.0 mg/L minimum water quality standard. Also, a fecal coliform count below the discharge was at the 100 per 100 mL limit. The pond effluent and upstream station showed no elevated fecal counts; the high levels are probably from some other source (e.g., from the mill site itself).

Boise creek samples analyzed for pH were within the 6.5 to 8.5 range allowed for Class A waters and as specified in the NPDES permit. However, the drop in pH across the mill site of 1.1 units (7.8 at the upstream station and 6.7 at the downstream site) exceeded the 0.5 unit limit allowed for Class A waters.

Table 3. Ecology Analytical Results for General Chemistry - Weyco 10/88

Parameters	Pond Effluent					Boise Creek -Above-	Boise Creek -Below-		Site Runoff	Truck Wash Water	Lagoon Water
Station:	Pond Effluent					Boise Creek -Above-	Boise Creek -Below-		Site Runoff	Truck Wash Water	Lagoon Water
Type:	Grab	Grab	Grab	Grab	Composite	Grab	Grab	Grab	Grab	Grab	Grab
Date:	10/25	10/25	10/26	11/2	10/25-26	10/25	10/25	10/26	11/2	11/2	10/26
Time:	1212	1604	1100	1330	1100-1100	1130	1440	1230	1250	1330	1135
GENERAL CHEMISTRY											
Turbidity (NTU)	18	12			17	<1	<1	1			
pH (S.U.)					5.5						
Conductivity (umhos/cm)					47						
Alkalinity (mg/L as $CaCO_3$)					<10						
Cyanide (mg/L)											<0.002
Solids (mg/L)											
TS					70						
TNVS					18						
TSS	6	6	2	6	10	1	4	11	6100		
TNVSS					5						
BOD_5 (mg/L)			5		<5						
COD (mg/L)	23	22	22	27	24	6	6	11	3400	69	
Nutrients (mg/L)											
NH_3-N	<0.010	0.014	0.010	0.030	<0.010	<0.010	0.010	<0.010	0.020		
NO_3+NO_2-N	0.468	0.484	0.491	0.410	0.510	0.354	0.363	0.337	0.010		
T-Phosphate	0.064	0.059	0.049	0.110	0.057	0.013	0.017	0.024	0.120		
Fecal Coliform (#/100mL)	3	<3	3			3	100	39			
% Kleb	0		0			0	0	17			
Phenols											4
Grease & Oils	3	4	4	<1			2	3	29	1	
FIELD ANALYSES											
Temperature (°C)	13.8	12.8	11.2			8.7	9.9	9.4			
pH (S.U.)	6.9	6.6	6.7			7.8	6.7	6.7			
Conductivity (umhos/cm)	45	45	43			45	53	50			
Dissolved Oxygen (mg/L)						8.0	7.6	7.4			

Table 5. Comparison of Water Quality Standards and NPDES Permit Limits to Boise Creek Data - WEYCO, 10/88

Parameter	Water Quality Standard	NPDES Permit Limit	Boise Creek Data: Above Discharge	Boise Creek Data: Below Discharge
D.O. (mg/L)	exceed 8.0	Equal to or greater than background	8.0	7.4, 7.6
Fecal Coliform (#/100mL)	100*	--	3 (0% kleb)	100 (0% kleb) 39 (17% kleb)
Temperature (°C)	not exceed 18.0	--	8.7	9.9, 9.4
pH (S.U.)	6.5 to 8.5#	6.5 to 8.5	7.8	6.7, 6.7
Turbidity (NTU)	not exceed 5 NTU over background	not exceed 5 NTU over background**	<1	<1, 1

* - Geometric mean, not more than 10 percent of samples can exceed 200.
\# - Man-caused variation within a range of less than 0.5 S.U.
** - When the receiving water has a turbidity of 50 NTU or less. If the receiving water turbidity is greater than 50 NTU, the allowable increase is 10 percent.

Flow measurements (Table 2) made on the first day (10/24) of the inspection indicated the receiving water available for dilution of the pond effluent was over 400 to 1. Other water quality parameters (TSS, COD, conductivity and turbidity) were similar between the upstream and downstream stations. No Boise Creek flow measurements were made on the other days of sampling (10/25 and 11/02); therefore, the variability of the Boise Creek/pond discharge dilution ratio is unknown.

Oil and grease at the downstream site of 2 and 3 mg/L was elevated. Oil and grease was also detected in the pond effluent at 3 and 4 mg/L. Because of the dilution available for the pond discharge, another source of oil and grease from the mill site is likely. No visible sheen was observed at either the pond effluent or the downstream site when sampling. No Boise Creek flow measurements were made on the other days of sampling (10/25 and 11/2); therefore, the variability of the Boise Creek pond discharge dilution ratio is unknown.

Results of Sediment Analyses

Results of priority pollutant analyses of pond sediment, lagoon sediment, and lagoon water are given in the Appendix (attached). Table 6 lists the compounds detected. No volatiles, semi-volatiles or pesticide/PCBs were found in the lagoon water at detection limits ranging from 0.05 to 6.9 ppb (ug/L). Pond sediment showed low level contamination with polyaromatic hydrocarbons (PAHs) to 270 ppb (ug/kg), 4-methylphenol at 170 ppb and phthalates to 1800 ppb.

Table 6. Organic Compounds Identified in Water and Sediments - WEYCO, 10/88

	Lagoon Water (ug/L)	Sediments (ug/kg dry wt) Lagoon Sediment	Pond Sediment
% Fines*		31.0	96.8
% Sand		69.0	3.2
% Gravel		<2	5.0
% Total Organic Carbon		38.0	9.9
% Dry Weight		11.3	17.8
Volatile Organics:			
Methylene Chloride	3.5 U	**17 BJ**	15 U
Benzene	1.0 U	**5.3 J**	4.2 U
Toluene	0.8 U	**120**	3.4 U
Ethylbenzene	0.8 U	**130**	3.4 U
Total Xylenes	1.8 U	**19**	7.6 U
Phenols:			
2-Methylphenol	1.0 U	**56 M**	230 U
4-Methylphenol	1.0 U	**360**	**170 M**
Polyaromatic Hydrocarbons:			
Naphthalene	1.0 U	230 U	**69 J**
2-Methylnaphthalene	1.0 U	230 U	**63 J**
Acenaphthene	1.0 U	**65 M**	230 U
Fluorene	1.0 U	**77 M**	230 U
Phenanthrene	1.0 U	**500**	**270**
Fluoranthene	1.0 U	230 U	**180 J**
Phthalates:			
bis(2-Ethylhexyl)Phthalate	1.0 U	**1100**	**1800**
Di-n-Octyl Phthalate	1.0 U	**1700 B**	**1100 B**
PCBs:			
Aroclor-1260	1.0 U	**1100**	140 U

* - Silt + Clay (<4um-62um).
U - Not detected at the detection limit shown.
B - Compound was also detected in the method blank.
J - Estimated amount, concentration is below method detection limit.
M - Indicates compound detected and confirmed by analyst with low spectral match parameters.

Lagoon sediments were the most contaminated. Several volatile organic compounds were detected which included toluene at 120 ppb, ethylbenzene at 130 ppb, total xylenes at 19 ppb, and benzene at an estimated concentration of 5.3 ppb. Semi-volatile compounds found included PAHs to 500 ppb, 2-methylphenol at 56 ppb, 4-methylphenol at 360 ppb, and phthalates to 1100 ppb. In addition, a PCB (Aroclor-1260) was found at 1100 ppb. EPA regulates the disposal of dangerous waste at PCB concentrations of 50 ppm (50,000 ppb) or more. However, state guidelines are more strict setting a 1 ppm (1000 ppb) limit (Ecology, 1988).

Mercury, chromium, copper, nickel, and zinc detected in the lagoon sediments were generally two to four times lower than those in the pond sediments. Arsenic, silver, and lead concentrations were similar between the two sediment samples. Both the lagoon and pond sediment metals do not appear elevated when compared to sludge metal concentrations found during Ecology Class II inspections at municipal sewage treatment plants (Table 7).

Table 7. Pond and Lagoon Metals Compared to Municipal Sewage Sludge Concentrations - WEYCO, 10/88.

			Municipal Sewage Sludge*		
Metal	Pond Sediment (mg/Kg dry wt)	Lagoon Sediment (mg/Kg dry wt)	Range (mg/Kg dry wt)	Geometric mean (mg/Kg dry wt)	Number of Samples
Cadmium	0.50 U	0.50 U	<0.1-25	7.6	34
Chromium	33.2	16	15- 300	61.8	34
Copper	68.8	33.7	75-1700	398	34
Lead	25	21	35 -600	207	34
Nickel	20.6	10.6	<0.1-62	1200	33
Arsenic	3.5	2.8	-	-	-
Silver	0.058	0.051	-	-	-
Antimony	0.3 U	0.7 J	-	-	-
Selenium	0.2 U	0.2 U	-	-	-
Thallium	0.20	0.1 U	-	-	-
Mercury	0.036	0.011	-	-	-
Beryllium	0.81	0.40	-	-	-

* Data collected during previous Class II inspections at activated sludge municipal wastewater treatment plants throughout Washington State (Hallinan, 1988).

Qualifiers: U - Not detected at detection limits shown.
J - Estimated amount, concentration is below method detection limit.

Hardness of the lagoon water sample was not measured during the inspection. Assuming a conservative 40 mg/L hardness as $CaCO_3$, arsenic and nickel were below Washington State water quality standards (Table 8). However, copper slightly exceeded both acute and chronic criteria for protection of aquatic life.

Table 8. Comparison of Lagoon Water Metals to Water Quality Criteria - WEYCO, 10/88

Metal	Lagoon Water (ug/L)	Washington State Water Quality Criteria (EPA, 1986)* Acute (ug/L)	Chronic (ug/L)
Arsenic	3.4	360	190
Copper	8.5 J	7.5	5.4
Nickel	0.02	653	73

* - Water hardness assumed to be 40 mg/L as $CaCO_3$.
Qualifiers: J - Estimated amount, concentration is below method detection limit

Results of Wet Weather Sampling

Results from the November visit are also listed in Table 3. It was raining lightly during the sampling. Mill site runoff, sampled adjacent to the mill shop, was elevated in TSS, COD, and oil and grease. This runoff flows into the pond via a slough which has three oil and grease booms. No sheen was noticed after the final boom.

The truck wash water had a heavy oil sheen when sampled. However, the analyses of the wash water showed low levels of oil and grease. Petroleum fuels (gasoline through #2 fuel oil) are partially lost and therefore not accurately quantified by the analytical method used (Huntamer, 1988). The wash water had a mildly elevated COD (69 mg/L) compared to the pond effluent (27 mg/L).

Comparison of Lab Results

A comparison of laboratory results of the pond effluent grab sample of October 26 are listed in Table 9. BOD, TSS, and pH from both labs agreed closely.

Table 9. Comparison of Laboratory Results WEYCO, 10/88

Station:	Pond Effluent	
Type:	Grab	
Date:	10/26	
Time:	1100	
Sampler:	Ecology	WEYCO
Laboratory:	Ecology	WEYCO
BOD_5 (mg/L)	<5	2
pH (S.U.)	6.7	6.65
TSS (mg/L)	2	3

CONCLUSIONS AND RECOMMENDATIONS

1. Pond effluent parameters were within all NPDES permit limits during the inspection.

2. The pond discharge did not substantially impact Boise Creek. However, fecal coliform, oil and grease, and pH below the discharge were elevated (possibly due to some source on the mill site). Monitoring requirements in the new permit should determine whether the pH drop across the mill site is a continuing problem.

3. Pond sediment was mildly contaminated with PAHs and 4-methylphenol. If the pond is dredged or filled, disturbed sediments should not be allowed to enter Boise Creek. Abandoned lagoon sediments were contaminated with several volatile organics, PAHs, 2-methylphenol and PCBs. Levels of PCBs were high enough to designate the lagoon sediment as a state dangerous waste.

4. Mill site runoff was elevated in TSS, COD, and oil and grease. The boom at the truck wash site appeared ineffective at preventing oil and grease from entering the pond. The installation of oil/water separators (as required in the new permit) should be a more effective means of oil and grease removal for the mill site runoff and truck wash water. A sediment catch basin or some other means is also suggested to prevent TSS from mill site runoff from entering the pond.

5. Lab results from both Ecology and Weyerhaeuser agreed closely.

REFERENCES

Ecology, 1988. Water Quality Standards for Surface Waters of the State of Washington. Chapter 173-201 WAC. January, 1988.

Ecology, 1988. Dangerous Waste Regulations. Chapter 173-303 WAC. Amended September, 1988.

EPA, 1986. Quality Criteria for Water. EPA 440/5-86-001. May, 1986.

Hallinan, 1988. Metals Concentrations Found During Ecology Inspections of Municipal Water Treatment Plants. Memo to J. Bernhardt, April 11, 1988. Department of Ecology, Environmental Investigations and Laboratory Services.

Huntamer, D., 1988. Washington State Department of Ecology Laboratory Users Manual, Revised August, 1988.

PH:sk
Attachment

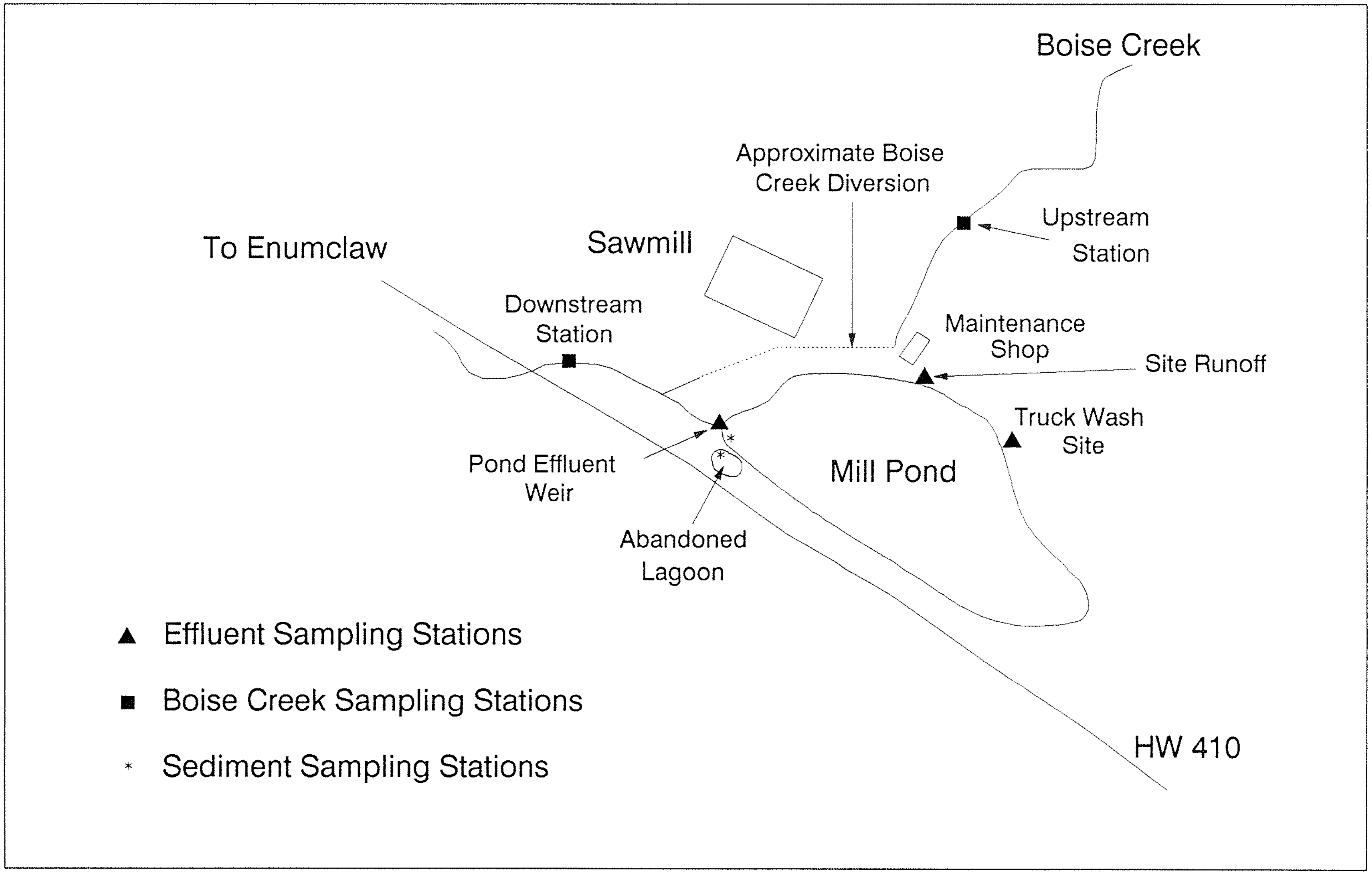

Figure 1. Sampling Locations - WEYCO, 10/88.

APPENDIX

Results of VOA Priority Pollutant Scan - WEYCO, 10/88

Compound	Lagoon Water (ug/L)	Sediments (ug/kg dry wt) Lagoon Sediment	Pond Sediment
Chloromethane	3.8 U	35 U	16 U
Bromomethane	3.1 U	29 U	13 U
Vinyl Chloride	2.0 U	19 U	8.4 U
Chloroethane	3.3 U	31 U	14 U
Methylene Chloride	3.5 U	17 BJ	15 U
Acetone	6.9 U	64 U	29 U
Carbon Disulfide	1.2 U	11 U	5.0 U
1,1-Dichloroethene	0.7 U	6.5 U	2.9 U
1,1-Dichloroethane	0.6 U	5.6 U	2.5 U
1,2-Dichloroethene (total)	0.8 U	7.4 U	3.4 U
Chloroform	1.1 U	10 U	4.6 U
1,2-Dichloroethane	0.5 U	4.6 U	2.1 U
2-Butanone	6.2 U	57 U	26 U
1,1,1-Trichloroethane	0.6 U	5.6 U	2.5 U
Carbon Tetrachloride	0.9 U	8.3 U	3.8 U
Vinyl Acetate	3.1 U	29 U	13 U
Bromodichloromethane	0.7 U	2.8 U	1.3 U
1,2-Dichloropropane	0.7 U	6.5 U	2.9 U
Trans-1,3-Dichloropropene	1.8 U	17.6 U	8.0 U
Trichloroethene	0.6 U	5.6 U	2.5 U
Dibromochloromethane	0.7 U	6.5 U	2.9 U
1,1,2-Trichloroethane	0.7 U	6.5 U	2.9 U
Benzene	1.0 U	5.3 J	4.2 U
cis-1,3-Dichloropropene	1.9 U	17 U	7.6 U
2-Chloroethylvinylether	2.7 U	25 U	11 U
Bromoform	2.5 U	23 U	11 U
4-Methyl-2-Pentanone	3.5 U	32 U	15 U
2-Hexanone	3.2 U	30 U	13 U
Tetrachloroethene	0.5 U	4.6 U	2.1 U
1,1,2,2-Tetrachloroethane	2.7 U	25 U	11 U
Toluene	0.8 U	120	3.4 U
Chlorobenzene	0.9 U	8.3 U	3.8 U
Ethylbenzene	0.8 U	130	3.4 U
Styrene	1.1 U	10 U	4.6 U
Total Xylenes	1.8 U	19	7.6 U

Qualifiers:
U = Not detected at detection limit shown
B = Also detected in method blank
J = Estimated amount concentration is below method detection limit

Results of BNA Priority Pollutant Scan - WEYCO, 10/88

		Sediments (ug/kg dry wt)	
Compound	Lagoon Water (ug/L)	Lagoon Sediment	Pond Sediment
Phenol	1.0 U	230 U	230 U
bis(2-Chloroethyl)Ether	1.0 U	230 U	230 U
2-Chlorophenol	1.0 U	230 U	230 U
1,3-Dichlorobenzene	1.0 U	230 U	230 U
1,4-Dichlorobenzene	1.0 U	230 U	230 U
Benzyl Alcohol	5.0 U	1100 U	1200 U
1,2-Dichlorobenzene	1.0 U	230 U	230 U
2-Methylphenol	1.0 U	56 M	230 U
bis(2-chloroisopropyl)ether	1.0 U	230 U	230 U
4-Methylphenol	1.0 U	360	170 M
N-Nitroso-Di-n-Propylamine	1.0 U	230 U	230 U
Hexachloroethane	2.0 U	460 U	470 U
Nitrobenzene	1.0 U	230 U	230 U
Isophorone	1.0 U	230 U	230 U
2-Nitrophenol	5.0 U	1100 U	1200 U
2,4-Dimethylphenol	2.0 U	460 U	470 U
Benzoic Acid	10.0 U	2300 U	2300 U
bis(2-Chloroethoxy)Methane	1.0 U	230 U	230 U
2,4-Dichlorophenol	3.0 U	680 U	700 U
1,2,4-Trichlorobenzene	1.0 U	230 U	230 U
Naphthalene	1.0 U	230 U	69 J
4-Chloroaniline	3.0 U	680 U	700 U
Hexachlorobutadiene	2.0 U	460 U	470 U
4-Chloro-3-Methylphenol	2.0 U	460 U	470 U
2-Methylnaphthalene	1.0 U	230 U	63 J
Hexachlorocyclopentadiene	5.0 U	1100 U	1200 U
2,4,6-Trichlorophenol	5.0 U	1100 U	1200 U
2,4,5-Trichlorophenol	5.0 U	1100 U	1200 U
2-Chloronaphthalene	1.0 U	230 U	230 U
2-Nitroaniline	5.0 U	1100 U	1200 U
Dimethyl Phthalate	1.0 U	230 U	230 U
Acenaphthylene	1.0 U	230 U	230 U
3-Nitroaniline	5.0 U	1100 U	1200 U
Acenaphthene	1.0 U	65 M	230 U
2,4-Dinitrophenol	10.0 U	2300 U	2300 U
4-Nitrophenol	5.0 U	1100 U	1200 U
Dibenzofuran	1.0 U	230 U	230 U
2,4-Dinitrotoluene	5.0 U	1100 U	1200 U
2,6-Dinitrotoluene	5.0 U	1100 U	1200 U
Diethylphthalate	1.0 U	230 U	230 U
4-Chlorophenyl-phenylether	1.0 U	230 U	230 U
Fluorene	1.0 U	77 M	230 U
4-Nitroaniline	5.0 U	1100 U	1200 U
4,6-Dinitro-2-Methylphenol	10.0 U	2300 U	2300 U
N-Nitrosodiphenylamine	1.0 U	230 U	230 U
4-Bromophenyl-phenylether	1.0 U	230 U	230 U
Hexachlorobenzene	1.0 U	230 U	230 U
Pentachlorophenol	5.0 U	1100 U	1200 U
Phenanthrene	1.0 U	500	270
Anthracene	1.0 U	230 U	230 U
Di-n-Butylphthalate	1.0 U	230 U	230 U
Fluoranthene	1.0 U	230 U	180 J
Pyrene	1.0 U	230 U	230 U
Butylbenxylphthalate	1.0 U	230 U	230 U
3,3'-Dichlorobenzidine	5.0 U	1100 U	1200 U
Benzo(a)Anthracene	1.0 U	230 U	230 U
bis(2-Ethylhexyl)Phthalate	1.0 U	1100	1800
Chrysene	1.0 U	230 U	230 U
Di-n-Octyl Phthalate	1.0 U	1700 B	1100 B
Benzo(b)Fluoranthene	1.0 U	230 U	230 U
Benzo(k)Fluoranthene	1.0 U	230 U	230 U
Benzo(a)Pyrene	1.0 U	230 U	230 U
Indeno(1,2,3-cd)Pyrene	1.0 U	230 U	230 U
Dibenz(a,h)Anthracene	1.0 U	230 U	230 U
Benzo(ghi)Perylene	1.0 U	230 U	230 U

Qualifiers:
U = Not detected at detection limit shown
B = Also detected in method blank
J = Estimated amount, concentration is below method detection limit
M = Detected and confirmed by analyst with low spectral match parameters

Results Pest/PCB and Metal Priority Pollutant Scans - WEYCO, 10/88

Compound	Lagoon Water (ug/L)	Sediments (ug/kg dry wt) Lagoon Sediment	Pond Sediment
Alpha-BHC	0.05 U	7.0 U	7.0 U
Beta-BHC	0.05 U	7.0 U	7.0 U
Delta-BHC	0.05 U	7.0 U	7.0 U
Gamma-BHC (Lindane)	0.05 U	7.0 U	7.0 U
Heptachlor	0.05 U	7.0 U	7.0 U
Aldrin	0.05 U	7.0 U	7.0 U
Heptachlor Epoxide	0.05 U	7.0 U	7.0 U
Endosulfan I	0.15 U	21 U	21 U
Dieldrin	0.10 U	14 U	14 U
4,4'-DDE	0.10 U	14 U	14 U
Endrin	0.10 U	14 U	14 U
Endosulfan II	0.10 U	14 U	14 U
4,4'-DDD	0.10 U	14 U	14 U
Endosulfan Sulfate	0.10 U	14 U	14 U
4,4'-DDT	0.10 U	14 U	14 U
Methoxychlor	0.20 U	28 U	28 U
Endrin Ketone	0.10 U	14 U	14 U
Gamma-Chlordane	0.10 U	14 U	14 U
Alpha-Chlordane	0.10 U	14 U	14 U
Toxaphene	5.0 U	700 U	700 U
Aroclor-1016	1.0 U	140 U	140 U
Aroclor-1242	1.0 U	140 U	140 U
Aroclor-1248	1.0 U	140 U	140 U
Aroclor-1254	1.0 U	140 U	140 U
Aroclor-1260	1.0 U	1100	140 U
Metal		(mg/kg dry wt)	
Arsenic	3.4	2.8	3.5
Silver	0.5 U	0.051	0.058
Antimony	3 U	0.7 J	0.3 U
Selenium	2 U	0.2 U	0.2 U
Thallium	2.0 U	0.1 U	0.20
Mercury	0.06 U	0.011	0.036
Beryllium	1 U	0.40	0.81
Cadmium	5 U	0.50 U	0.50 U
Chromium	10 U	16	33.2
Copper	8.5 J	33.7	68.8
Lead	50 U	21	25
Nickel	0.02	10.6	20.6
Zinc	4 U	47.1	136

Qualifiers:
U = Not detected at detection limit shown
J = Estimated amount, concentration is below method detection limit